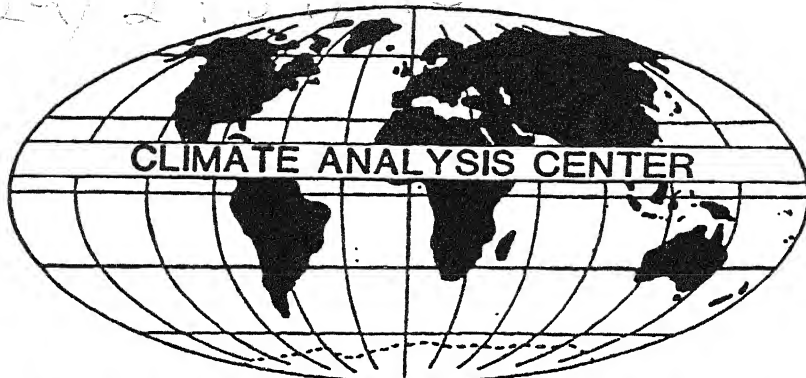


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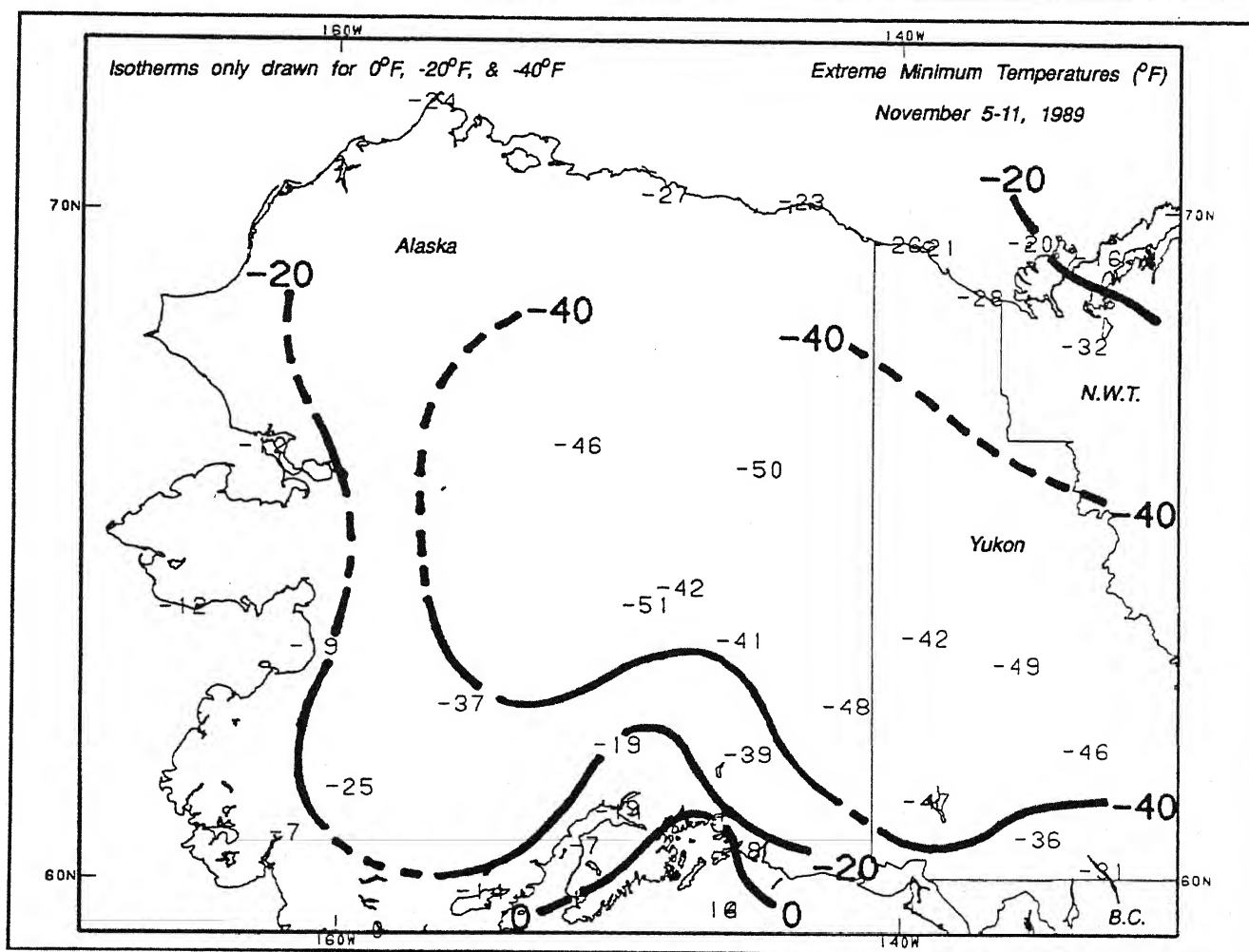


WEEKLY CLIMATE BULLETIN

No. 89/45

Washington, DC

November 11, 1989



IN CONTRAST TO THE UNSEASONABLY MILD WEATHER ACROSS THE LOWER 48 STATES, BITTERLY COLD ARCTIC AIR COVERED MUCH OF ALASKA AND THE CANADIAN YUKON WHERE LOWS PLUMMETED TO NEAR -50°F AND WEEKLY TEMPERATURES AVERAGED UP TO 31°F BELOW NORMAL

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE - NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- Highlights of major climatic events and anomalies.
- U.S. climatic conditions for the previous week.
- U.S. apparent temperatures (summer) or wind chill (winter).
- U.S. cooling degree days (summer) or heating degree days (winter).
- Global two-week temperature anomalies.
- Global four-week precipitation anomalies.
- Global monthly temperature and precipitation anomalies.
- Global three-month precipitation anomalies (once a month).
- Global twelve-month precipitation anomalies (every three months).
- Global three-month temperature anomalies for winter and summer seasons.
- Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF NOVEMBER 11, 1989

1. Alaska and Northwestern Canada:

TEMPERATURES TURN BITTERLY COLD.

Arctic-like conditions enveloped the area as temperatures approached -46°C and minimum wind chill values plunged to -59°C . Average temperatures at Bettles, AK were more than 18°C below normal while several other locations noted departures varying from -10°C to -15°C (see U.S. Weekly Climate Highlights) [2 weeks].

2. Southern Great Plains:

RAINS DIMINISH.

While rainfall in previous weeks had improved moisture conditions, pockets of substantial dryness lingered. With the warm and dry weather of the past week, anomalous dryness persisted in these areas (northern Texas, southern Missouri) and increased slightly in areal extent over Oklahoma and Kansas [Returning at 8 weeks].

3. Southeastern U.S.:

NEW ORLEANS DRENCHED BY STRONG THUNDERSTORMS.

Substantial damage occurred from tornadoes while heavy rains created flooding conditions in portions of Louisiana, Mississippi, Alabama, and Georgia. The greatest 24-hour amount was recorded on Nov. 7 when 278 mm fell at New Orleans/Moisant, LA while New Orleans NAS recorded three consecutive days of heavy precipitation (Nov. 6-8) when 114, 113, and 118 mm, respectively, was observed (see U.S. Weekly Climate Highlights) [Episodic Event].

4. Southern and Eastern Europe:

UNUSUAL WARMTH LINGERS.

Temperatures returned to more normal levels in portions of northern and western Europe as cloudy skies and rain moved into these areas. Meanwhile, anomalous warmth continued in southern and especially eastern Europe where temperature departures neared $+6^{\circ}\text{C}$ [4 weeks].

5. Western U.S.S.R.:

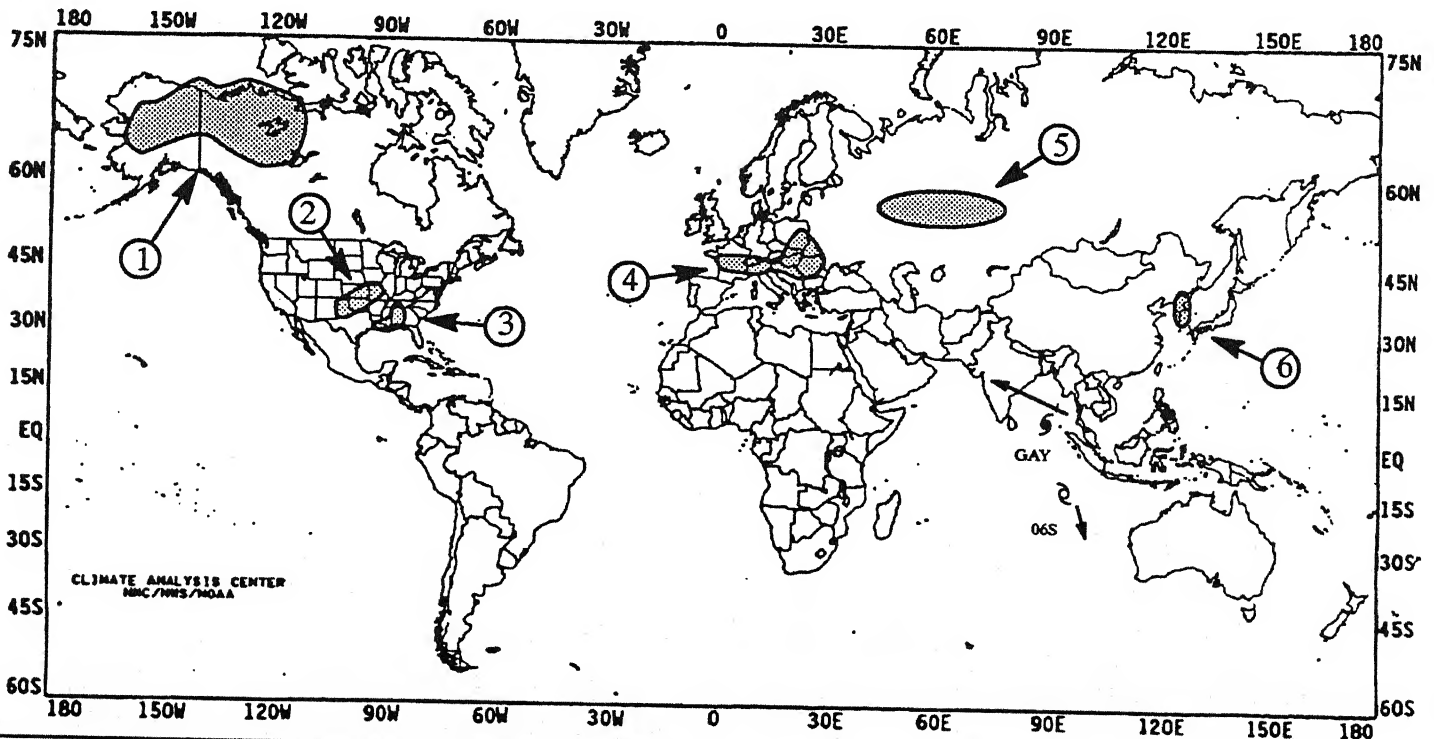
PLENTIFUL MOISTURE ABATES.

Dry weather (less than 5 mm) eased wet conditions across the region that had resulted from excessive precipitation in previous weeks [Ended at 5 weeks].

6. North and South Korea:

UNSEASONAL ABUNDANT PRECIPITATION PERSISTS.

Nearly 251 mm was observed and temperatures averaged as much as 8°C above normal in Korea as unusually warm and wet weather continued to dominate the peninsula. The precipitation is notable since the area usually experiences a sharp drop in the totals as it enters the dry winter months. As such, deviations approach 915% of normal for the past 28 days [5 weeks].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.
MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF NOVEMBER 5 THROUGH NOVEMBER 11, 1989

Warm weather ruled the vast majority of the lower 48 states last week, especially in the lower Mississippi Valley, southern Great Plains, and Pacific Northwest. Cold Canadian air made only two brief visits to the northern half of the U.S. before quickly retreating. On Sunday, a strong high pressure center moved off the Eastern Seaboard while a storm system organized in the northeastern Great Plains. A cold front trailed southward from the storm system into the Texas Panhandle. The southerly flow between the two systems swept mild, unstable air northward from the Gulf of Mexico across the eastern half of the country. As the week progressed, the storm raced northeastward into Canada and dragged the cold front quickly eastward to the Appalachians by late Monday. Showers and thunderstorms formed along and ahead of the front, dropping light rain on most of the South and East. By mid-week, the front was located off the New England Coast but had stalled across the Southeast. Small waves of low pressure developed along the stationary front, triggering heavy rain and intense thunderstorms across the lower Mississippi Valley and the Gulf Coast states. New Orleans, LA received more than 13 inches of rain on Tuesday; however, dry weather during the previous five weeks and low river levels limited widespread flooding to coastal lowlands. Severe weather, including hail, damaging winds, and a few tornadoes hit sections of Alabama and Mississippi. Drier air behind a second cold front finally moved into the region late in the week. Farther west, a slow-moving storm system pushed onshore mid-week near Vancouver Island. The combination of heavy rains and unusually high temperatures caused rapid snowmelt and significant river flooding in the northern Cascades. As the storm continued eastward, colder air allowed precipitation to fall as snow across the northern and central Rockies where isolated mountain passes were blanketed with up to a foot. High winds, gusting in excess of 100 mph at Choteau, MT on Friday, were also present throughout the northern and central Rockies during the week. Relatively dry weather occurred throughout the remainder of the country west of the Mississippi, marking the eighth consecutive week with little or no precipitation in the northern and western Plains (see Figure 1). A strong dome of high pressure brought bitterly cold Arctic air to much of Alaska and kept precipitation to a minimum at most locations while seasonable temperatures and dry

weather prevailed across Hawaii with the exception of heavy showers at the westernmost islands.

According to the River Forecast Centers, strong thunderstorms inundated portions of southeastern Louisiana, central and southern Mississippi, southern Alabama, and the extreme northwestern Florida Panhandle with more than 4 inches of rain (see Table 1, Figure 2). Locally, parts of New Orleans, LA accumulated up to 17.5 inches of rain, much of it falling on Tuesday, while southeastern Alabama picked up nearly 10 inches on Wednesday. Heavy rains, totaling up to 7 inches, also soaked western Washington and the northern Cascades. Elsewhere, moderate to heavy precipitation was observed in the Tennessee and lower Ohio Valleys, throughout the remainder of the Southeast, and in parts of the northern Appalachians and coastal New England. Light to moderate amounts fell on the Pacific Northwest, in the extreme northern Rockies, across the north-central Plains and upper Midwest, and throughout most of the country east of the Mississippi River. Little or no precipitation was reported along the southern half of the Pacific Coast, in the southern three-quarters of the Intermountain West and Rockies, across the southern two-thirds of the Plains, throughout the lower Missouri Valley, and in most of Florida.

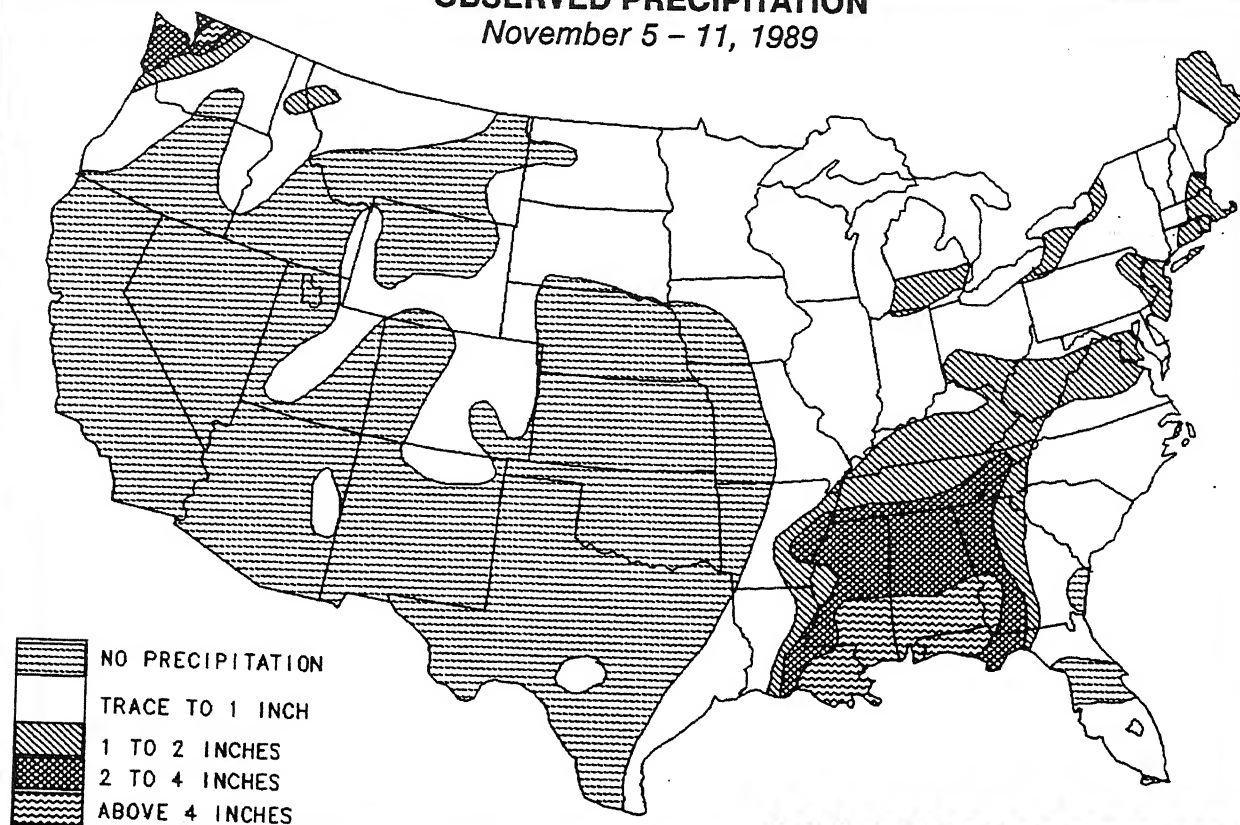
Weekly temperatures across much of the contiguous U.S. averaged above normal as zonal (west to east) flow kept the extremely cold air in Canada. The greatest positive departures (between +10°F and +14°F) were located in the Pacific Northwest and northern Rockies, the southern Great Plains, and the lower Mississippi Valley (see Table 2). Dozens of stations, most notably in the southern Great Plains and lower Mississippi Valley, tied or set new daily maximum temperature records during the week as highs reached into the eighties and lower nineties (see Figure 3). In sharp contrast, bitterly cold Arctic air covered much of Alaska where weekly temperatures averaged as much as 31°F below normal (see Table 3, Figure 4). Lows plummeted between -40°F and -50°F in east-central Alaska and near or below zero along the southern coast where minimum temperatures are normally in the upper twenties (see front cover). Additionally, gusty winds accompanied the subzero readings in the southern, western, and northern sections of the state to produce extremely dangerous wind chills as low as -75°F (see Figure 5).

TABLE 1. Selected stations with 3.00 or more inches of precipitation for the week.

STATION	TOTAL (INCHES)	STATION	TOTAL (INCHES)
NEW ORLEANS NAS, LA	17.55	MERIDIAN, MS	4.32
NEW ORLEANS/MOISANT, LA	14.37	COLUMBUS/FORT BENNING, GA	4.18
DOTHAN, AL	9.73	VALPARAISO/EGLIN AFB, FL	4.05
QUILLAYUTE, WA	8.98	MILTON/WHITING NAS, FL	4.04
BATON ROUGE, LA	8.38	BELLINGHAM, WA	3.90
BILOXI/KEESLER AFB, MS	8.25	MONTGOMERY, AL	3.85
NEW ORLEANS/LAKE FRONT, LA	7.56	COLUMBUS, GA	3.39
PENSACOLA NAS, FL	7.14	PANAMA CITY/TYNDALL AFB, FL	3.38
MOBILE, AL	7.12	MEMPHIS NAS, TN	3.05
PENSACOLA, FL	5.60	OLYMPIA, WA	3.04
JACKSON, MS	4.50	PINE BLUFF, AR	3.01
OZARK/CAIRNS AFB, AL	4.43		

OBSERVED PRECIPITATION

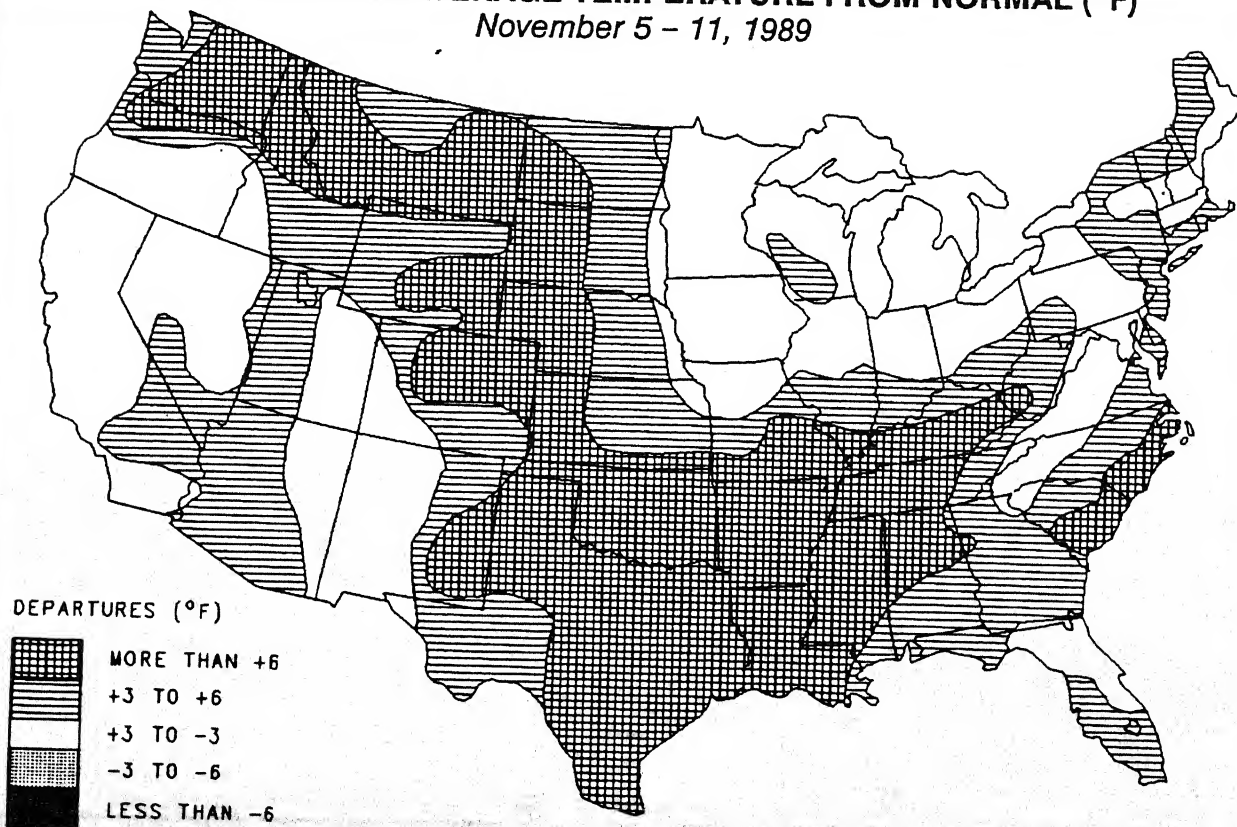
November 5 - 11, 1989



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DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

November 5 - 11, 1989



CLIMATE ANALYSIS CENTER / NOAA

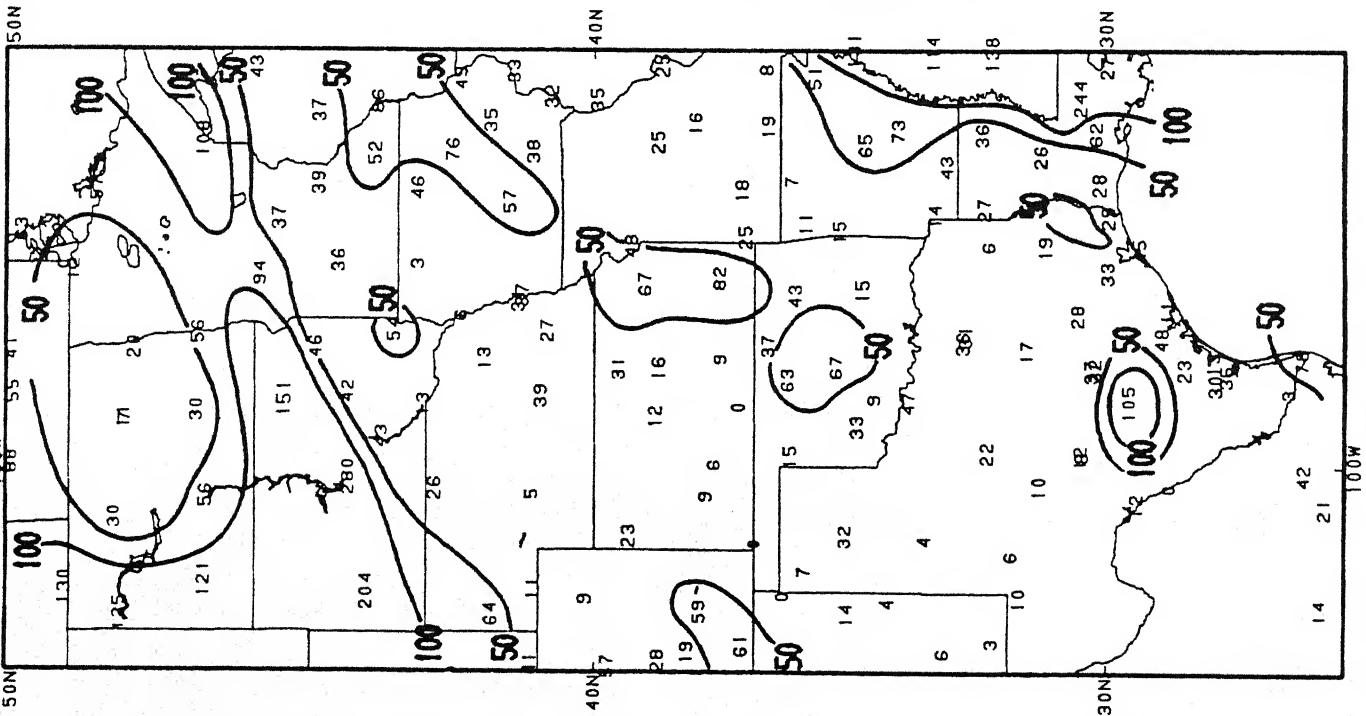


TABLE 2. Selected stations with temperatures averaging 10.0°F or more ABOVE normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
TEXARKANA, AR	+13.7	70.7	DALLAS/LOVE FIELD, TX	+10.9	69.2
EL DORADO, AR	+13.6	68.6	LITTLE ROCK, AR	+10.9	64.7
MONROE, LA	+13.5	70.4	LEWISTON, ID	+10.8	52.9
HELENA, MT	+12.4	46.8	BEEVILLE NAS, TX	+10.7	75.9
AUSTIN/BERGSTROM AFB, TX	+12.1	73.1	AUSTIN, TX	+10.6	71.6
PINE BLUFF, AR	+12.0	67.8	BUTTE, MT	+10.6	40.9
LUFKIN, TX	+11.7	71.3	SHREVEPORT, LA	+10.5	68.4
COLLEGE STATION, TX	+11.5	72.3	FAYETTEVILLE, AR	+10.5	59.6
YAKIMA, WA	+11.2	51.7	OMAK, WA	+10.5	47.6
BOZEMAN, MT	+11.2	44.3	ALICE, TX	+10.3	76.6
HARRISON, AR	+11.0	61.8	MISSOULA, MT	+10.2	44.7
MCALLEN, TX	+10.9	78.4	SIDNEY, NE	+10.0	47.4
ALEXANDRIA/ENGLAND AFB, LA	+10.9	70.2			

TABLE 3. Selected stations with temperatures averaging 10.0°F or more BELOW normal for the week.

STATION	DEPARTURE (°F)	AVERAGE (°F)	STATION	DEPARTURE (°F)	AVERAGE (°F)
BETTLES, AK	-31.3	-26.6	KING SALMON, AK	-16.4	9.6
FORT YUKON, AK	-27.7	-26.6	BETHEL, AK	-15.6	5.6
FAIRBANKS, AK	-26.8	-18.0	HOMER, AK	-15.4	15.8
BIG DELTA, AK	-24.7	-12.8	NORTHWAY, AK	-15.3	-12.2
MCGRATH, AK	-23.5	-12.8	BARTER ISLAND, AK	-13.9	-9.7
ANIAK, AK	-22.4	-3.5	KENAI, AK	-13.2	11.8
UNALAKLEET, AK	-20.5	-3.7	BARROW, AK	-12.3	-9.5
GULKANA, AK	-18.6	-6.4	KOTZEBUE, AK	-12.1	-0.1
ILIAMNA, AK	-18.1	8.6	VALDEZ, AK	-11.6	22.8
TALKEETNA, AK	-17.8	3.1	YAKUTAT, AK	-10.5	25.6
CORDOVA/MILE 13, AK	-17.2	15.5			
ANCHORAGE, AK	-16.5	8.4			

Figure 1. Percent of normal precipitation during Sep. 17-Nov. 11, 1989. Isoleths were only drawn for 50 and 100%. Even though the autumn months normally receive much less precipitation as compared to the usually wet late spring and early summer months, extremely dry weather has persisted across the central U.S. during the past 8 weeks. Most locations have measured less than 50% of the normal precipitation, and deficits (not shown) have accumulated up to 7 inches in parts of southeastern Texas. In the central and southern Great Plains and the western Corn Belt, deficiencies are generally between 2 and 4 inches.

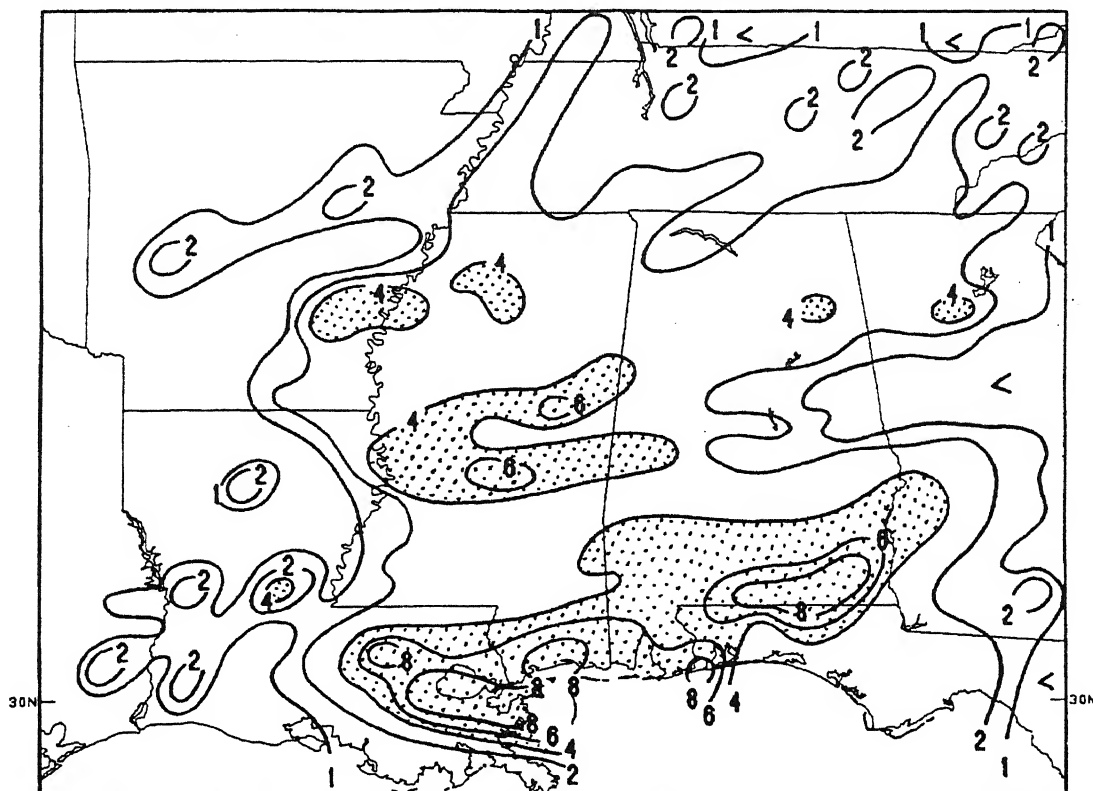


Figure 2. Total precipitation (inches) during November 5-11, 1989 based upon first-order synoptic, airways, and the River Forecast Centers stations. Isohyets are only drawn for 1, 2, 4, 6, and 8 inches, and stippled areas are more than 4 inches. A series of low pressure centers developed along a stationary front and triggered numerous showers and thunderstorms in the South. Torrential downpours, damaging winds, large hail, and a few tornadoes accompanied some of the thunderstorms. Up to 17.5 inches of rain inundated the New Orleans, LA metropolitan area during the week, and most of it (13 inches) fell on Tuesday. Widespread severe flooding, however, was limited to coastal lowlands as several weeks of dry weather and low river levels eased rapid runoff.

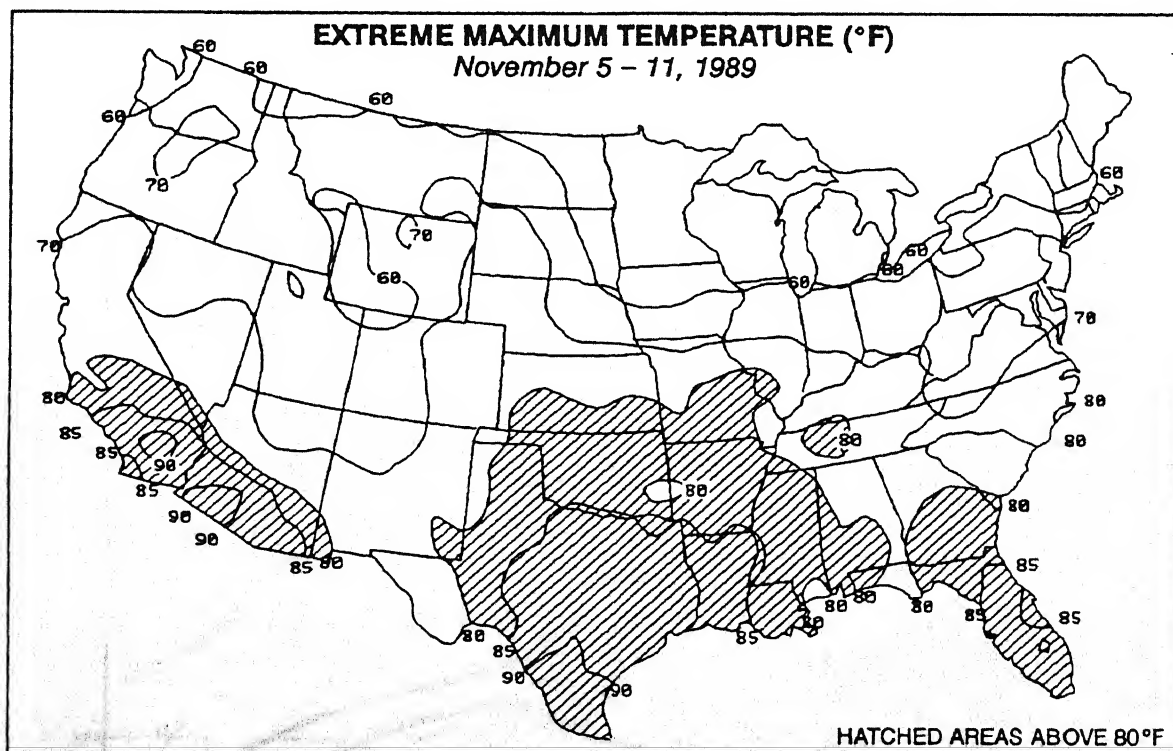


Figure 3. Extreme maximum temperatures (°F) during November 5-11, 1989. Isotherms are drawn for every 10°F up to 80°F, then drawn for every 5°F. Shaded areas are more than 80°F. Unseasonably mild weather prevailed across the lower 48 states as most locations reported above normal weekly temperatures. In addition, dozens of stations tied or set new daily maximum temperature records during the week as highs climbed into the eighties as far north as Illinois.

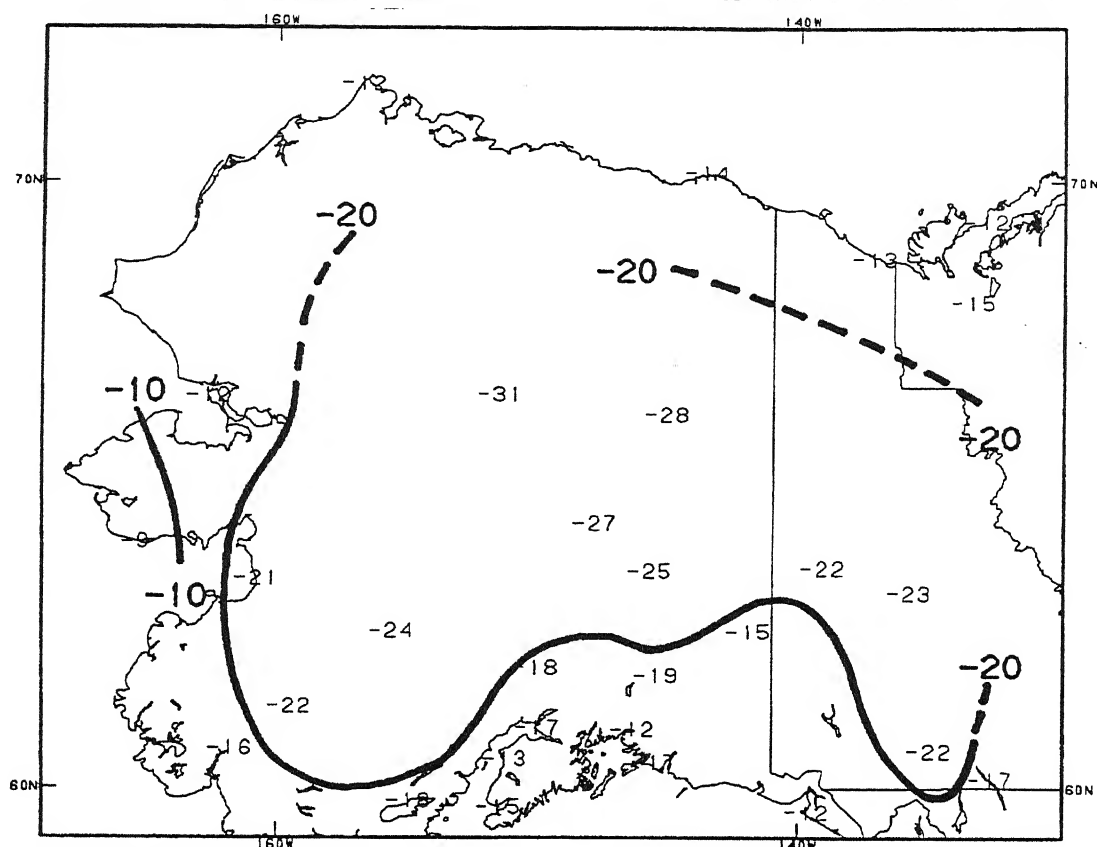


Figure 4. Average temperature departure from normal (°F) during November 5-11, 1989. Isotherms are only drawn for -10°F and -20°F. A strong dome of high pressure located over central Alaska brought bitterly cold Arctic air to much of the state and eastward into the Canadian Yukon and Northwest Territories. Weekly temperatures averaged as low as -31°F in central Alaska, and even the normally protected southern coastal stations experienced departures between -10°F and -15°F and readings at or below zero (see front cover).

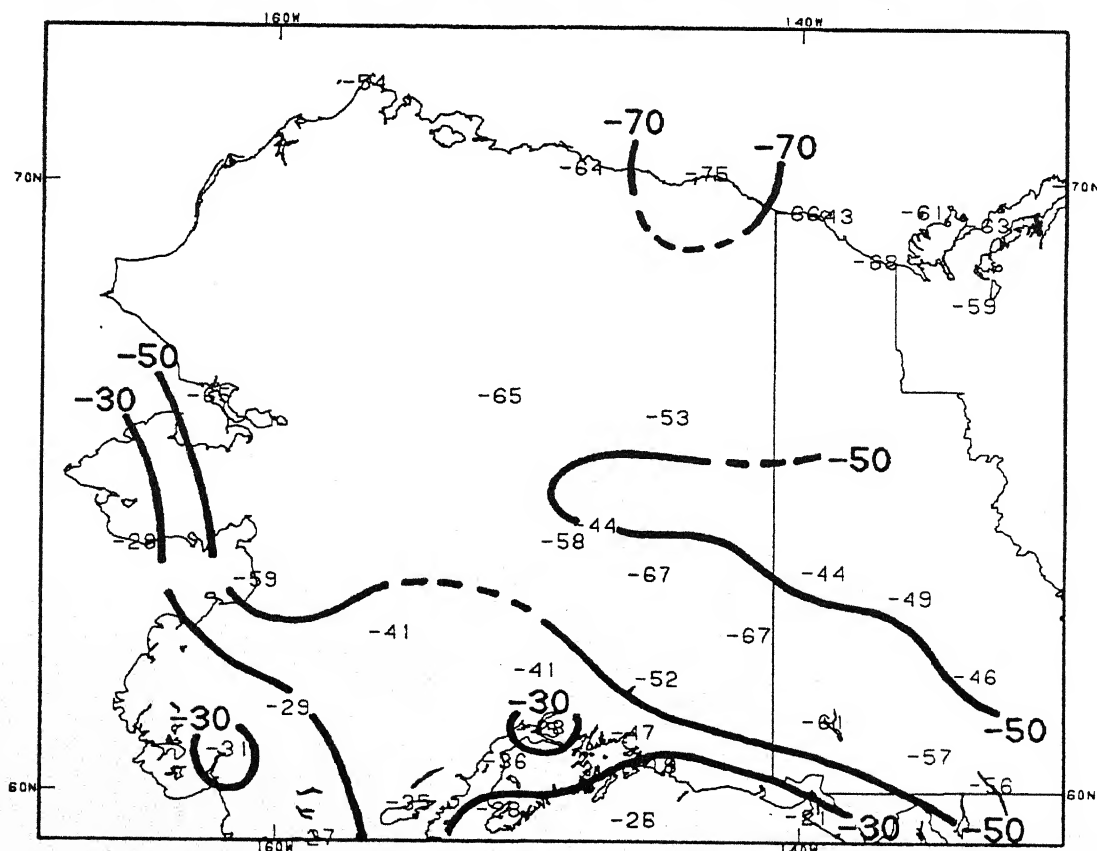
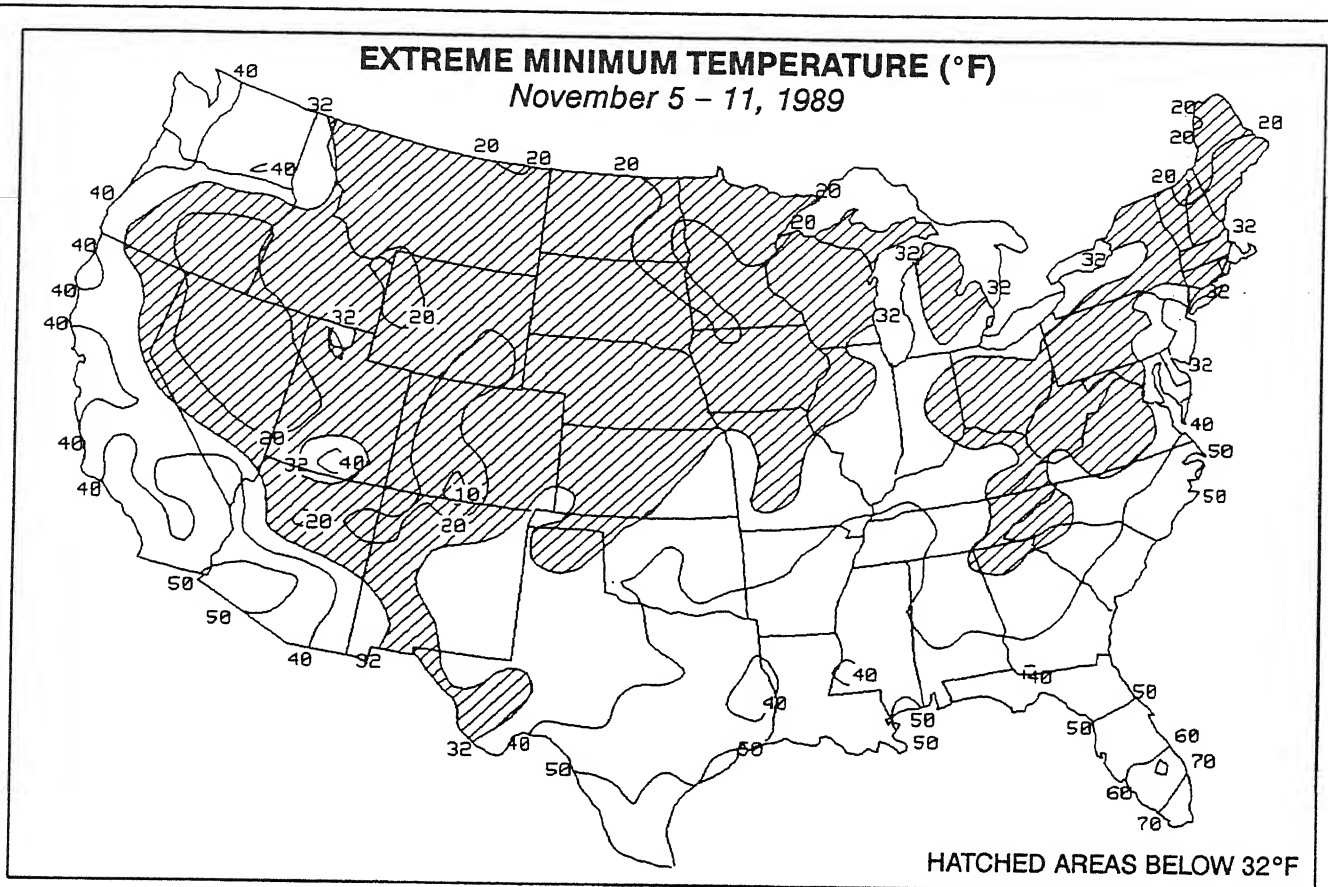
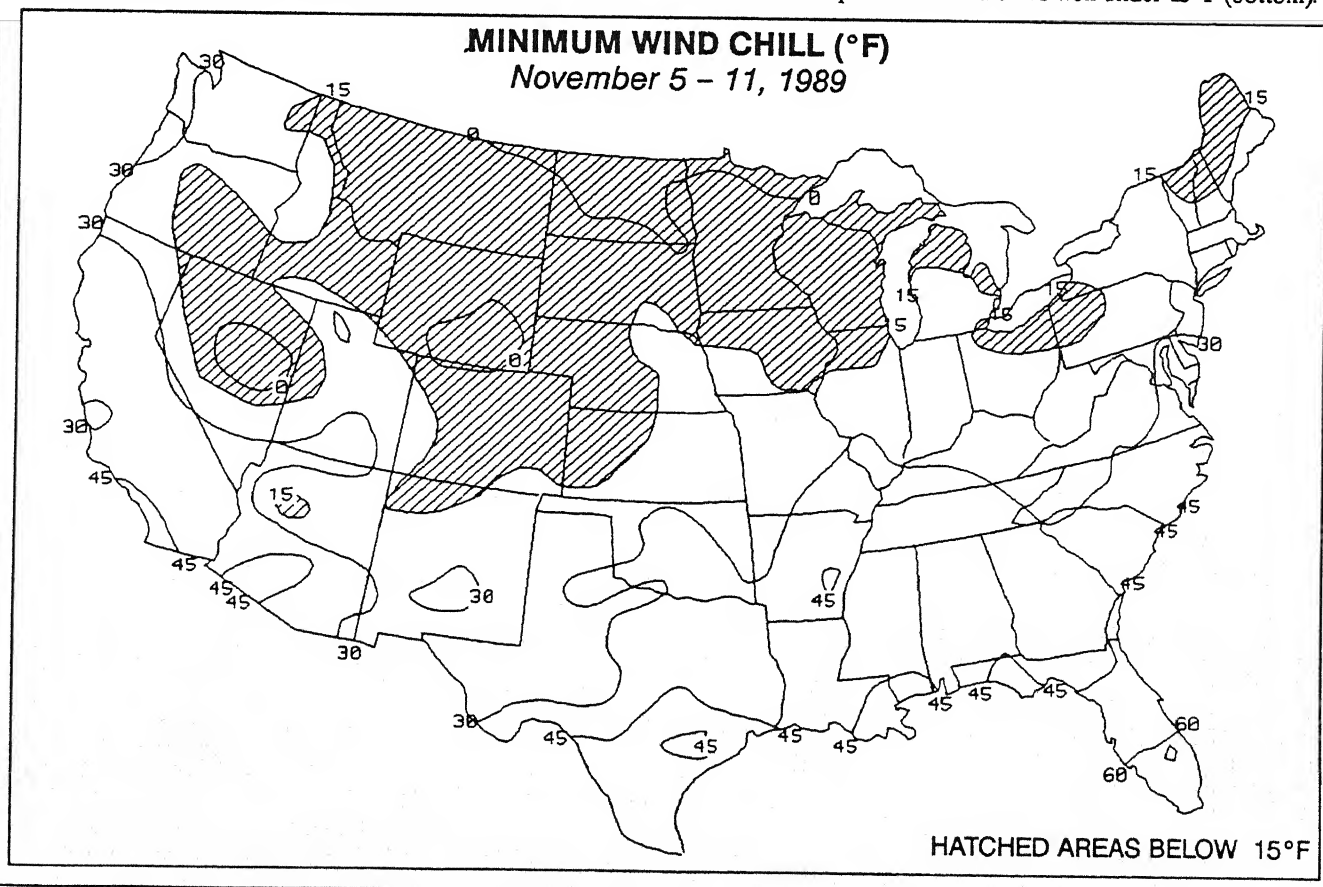


Figure 5. Extreme minimum wind chill (°F) during November 5-11, 1989. Isotherms are only drawn for -30°F, -50°F, and -70°F. Even though temperatures were much lower in the interior of Alaska, gusty winds in the southern, western, and northern sections of the state created extremely dangerous winds chills exceeding -50°F.

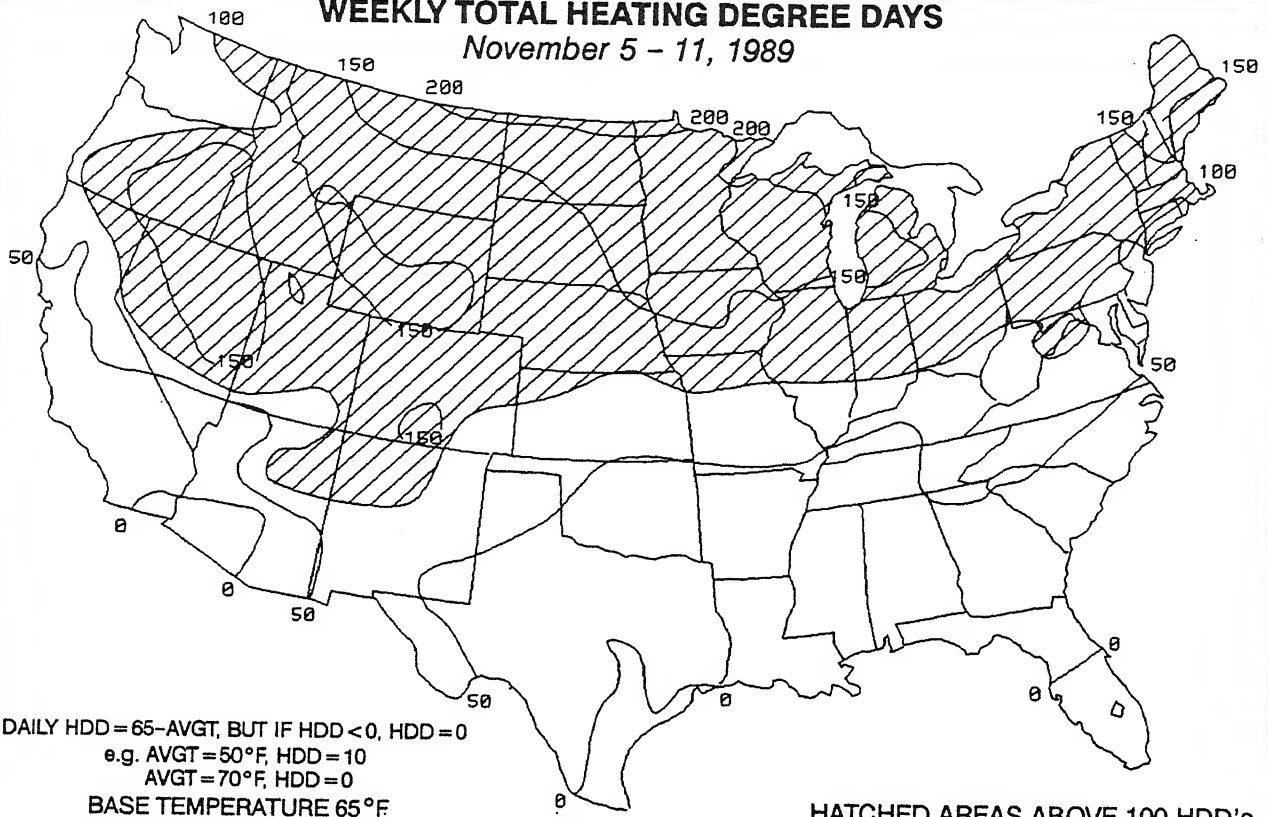


Radiative nighttime cooling (clear skies, little wind) allowed readings to fall below freezing in most of the western, central, and northeastern U.S., but a lack of extremely cold air kept extreme minimum temperatures generally above 20°F (top). Even though the weather was unusually mild, strong gusty winds in the north-central U. S. produced wind chills well under 15°F (bottom).



WEEKLY TOTAL HEATING DEGREE DAYS

November 5 - 11, 1989

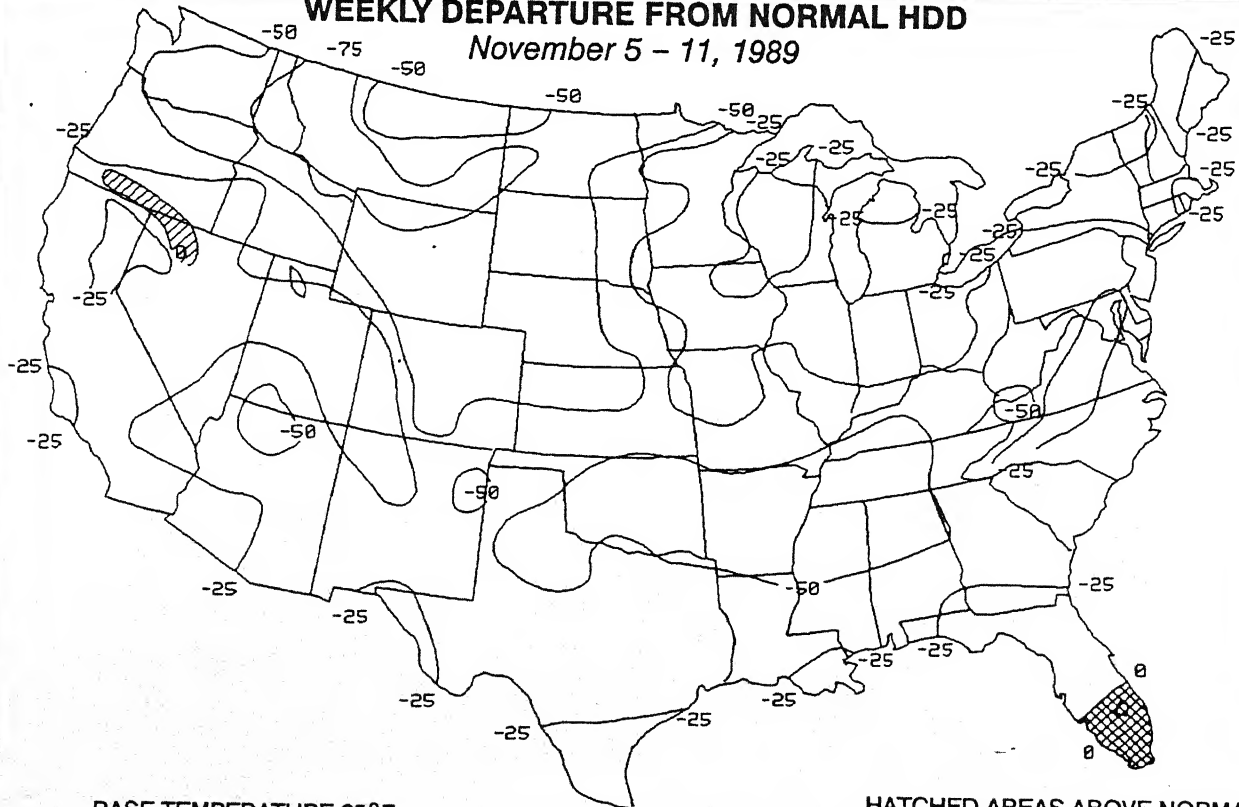


HATCHED AREAS ABOVE 100 HDD's

Unseasonably mild weather across much of the lower 48 states kept weekly total heating usage under 200 HDD's with the exception of extreme northern Montana, North Dakota, and Minnesota (top), and reduced the usual weekly heating demand by 25-75 HDD's (bottom).

WEEKLY DEPARTURE FROM NORMAL HDD

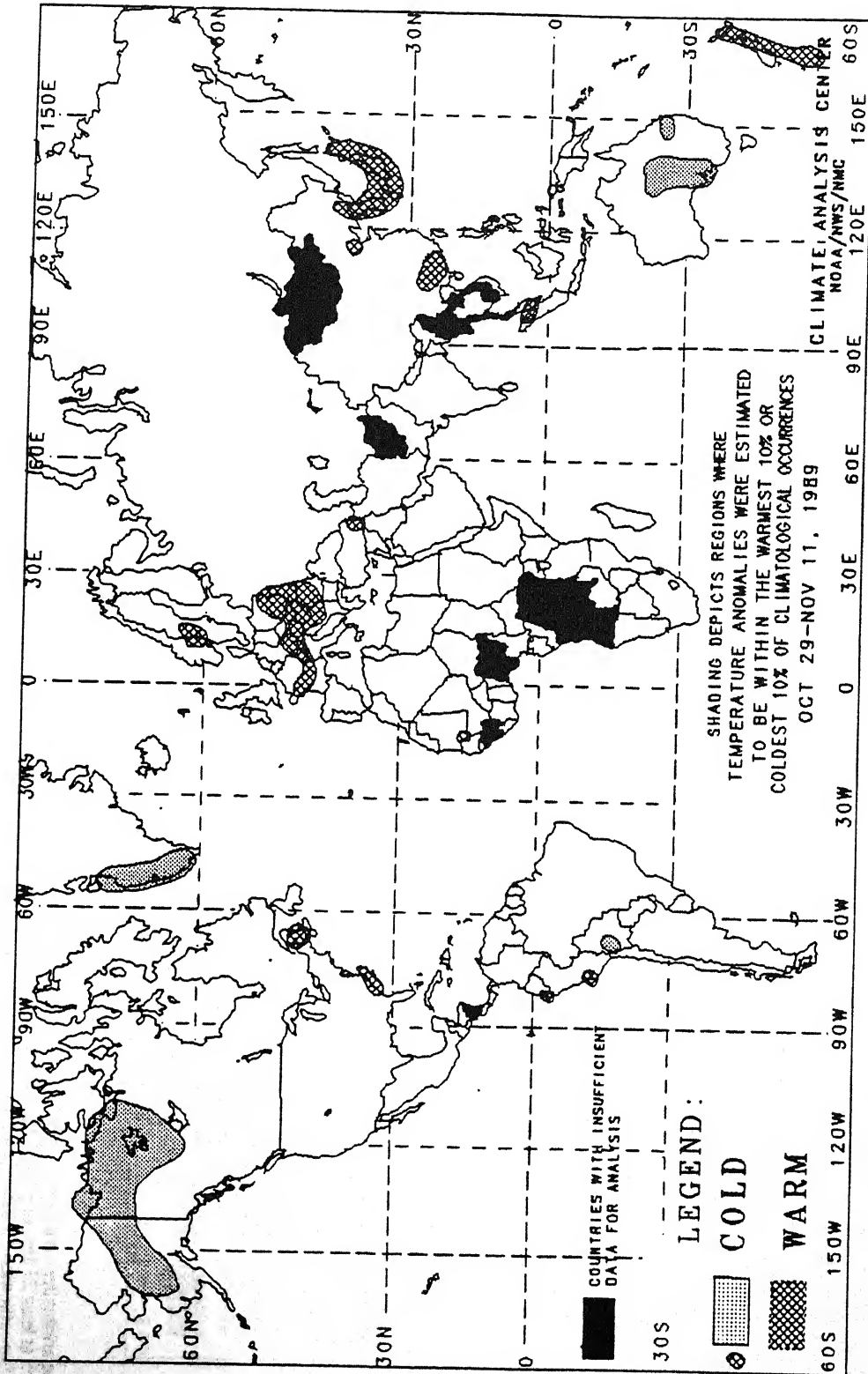
November 5 - 11, 1989



HATCHED AREAS ABOVE NORMAL
 CROSSHATCHED AREAS HAD ZERO TOTAL AND NORMAL HDD's

GLOBAL TEMPERATURE ANOMALIES

2 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

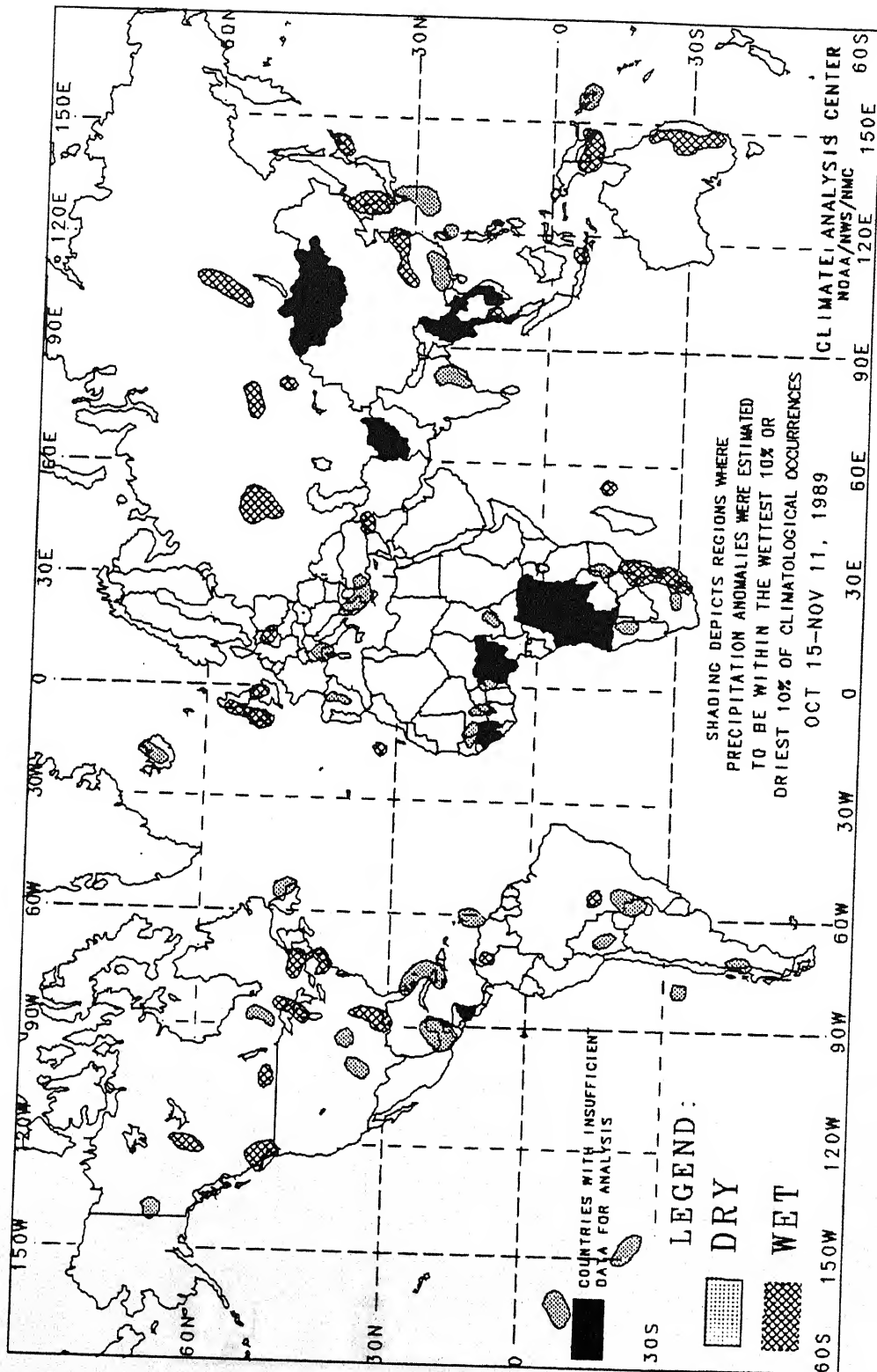
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

GLOBAL PRECIPITATION ANOMALIES

4 WEEKS



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

